
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Zhang et al.

Attorney Docket No.: CISCPI58/3179

Application No.: 09/766,020

Examiner: Shawn S. An

Filed: January 18, 2001

Group: 2613

Title: METHODS FOR EFFICIENT
BANDWIDTH SCALING OF
COMPRESSED VIDEO DATA

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reasons stated below.

Claims 1, 3-8, 11-15, and 26-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Haskell et al. (U.S. Patent No. 5,687,095) in view of Hamilton (U.S. Patent No. 5,617,142). Notably, this is the same prior art used in the rejection in the previous office action and to which the Applicant provided numerous rebuttal arguments in Amendment F. In the Final Office Action, the Examiner states “Applicant’s argument(s) with respect to amended claims have been carefully considered but are moot in view of the new ground(s) of rejection incorporating previously cited prior art references.” Applicant respectfully disagrees that these arguments are moot, and in fact they still apply to the stated references.

As to claim 1, the Examiner argues that Haskell teaches requantizing a first portion of the bitstream including video data using a first re-quantization scheme that does not decode the first

portion into a pixel domain, as well as teaching requantizing a second portion of the bitstream that includes a P frame and video data using a second re-quantization scheme that includes full decoding and re-encoding of the second portion. Applicant respectfully disagrees.

As stated in Amendment F, Haskell fails to teach a first and second re-quantization scheme. Haskell has only a single re-quantization scheme. The Examiner points to 107 of Figs. 1 and 7 in Haskell as allegedly teaching the first re-quantization scheme and 702 of Fig. 7 as allegedly teaching the second re-quantization scheme. However, closer inspection of Figs. 1 and 7 reveal that FIG. 7 is a magnified view of the DCT Coefficients processor 107 in FIG. 1. The only component described in Haskell that performs re-quantization is the quantizer 702. This is a single component within the DCT Coefficients processor 107 and it is not the case that the DCT coefficients processor is a different quantizer than quantizer 702, as the Examiner is apparently attempting to argue. As such, Haskell has only a single means for performing re-quantization and it cannot be argued that Haskell teaches having a first and a second re-quantization scheme when no such teaching can be inferred from a single quantizer.

Furthermore, as additionally stated in Amendment F, Haskell fails to teach that the first re-quantization scheme does not decode the first portion into a pixel domain while the second re-quantization scheme does include full decoding and re-encoding. The Examiner argues that Haskell teaches partially decoding the first portion which includes VMD and IQ processes and that an IQ process only results in inversely quantized coefficients that are still considered to be in a frequency domain. Applicant notes that, while not necessarily agreeing on the Examiner's interpretation, the Examiner's argument only addresses the first part of Applicant's argument with respect to this section. Namely, the Examiner has only addressed the arguments related to the element that the first re-quantization scheme does not decode the first portion into a pixel domain. The Examiner fails to address the argument that the second re-quantization scheme does include full decoding and re-encoding.

Indeed, the Examiner's own arguments further bolster Applicant's argument that the second re-quantization scheme does include full decoding and re-encoding. The Examiner states "[f]urthermore, in order to decode any portion of the bitstream into a pixel domain, the decoder conventionally has to perform such an inverse DCT (discrete cosine transform) to provide pixel domain data. Haskell et al does not perform an IDCT." Thus, the Examiner has conceded that Haskell does not perform full decoding and thus cannot meet the limitation "re-quantizing a

second portion of the bitstream that includes a P frame including video data or an I frame including video data using a second re-quantization scheme that includes full decoding and re-encoding of the second portion.” Applicant agrees. As was pointed out in Amendment F, Haskell never decompresses the data further than the DCT coefficients. As such, Haskell does not teach full decoding. Applicant also notes that Haskell does not teach full re-encoding either, since multiplexing encoder 109 receives DCT coefficients, which represent partially encoded video.

Furthermore, even though the Examiner has not attempted to combine Haskell with another references for purposes of teaching the full decoding and full re-encoding elements, Applicant notes that any such combination would fail anyway. Haskell specifically teaches away from full decoding and re-encoding. Specifically, Haskell states in col. 2 lines 41-53:

Pursuant to the **transcoding method**, a compressed video bit stream having a first bit rate is **fully decoded** into a video space known as the **pel** domain. This **fully-decoded** bit stream, which may be conceptualized as a **completely reconstructed video sequence**, is then encoded into a video bit stream having a second bit rate.

The existing **transcoding** method is **disadvantageous**. Since decoding as well as encoding processes are required, transcoding is very **time-consuming**. As a practical matter, the time delay is at least twice that of the end-to-end encoding delay. Such a delay is **not tolerable** for applications requiring real-time communication, such as multimedia conferencing. (emphasis added)

As stated in the MPEP: “Prior Art Must be Considered in its Entirety, Including Disclosures that Teach Away from the Claims” (MPEP 2141.02). It is respectfully submitted that the reference must not teach away from the claims (which Haskell openly does) in order to be used in a §103 combination rejection.

Hamilton teaches against full decoding and re-encoding as well: “Complexity and expense are reduced by only **partially** decompressing and requantizing the previously compressed information to modify its compression level without the need to provide components such as a motion compensation processor and frame store that would be required for full decompression of the information prior to recompression”(See Abstract, emphasis added). Thus, Hamilton also teaches against the claims and violates rules for the modification of a reference per the MPEP.

In addition, Hamilton states that “It would be further advantageous to provide such a scheme that requires only a minimal amount of compression related components at the redistribution sites which receive the high quality satellite signals and redistribute them locally at a higher compression level” (see col. 2. lines 60-67 of Hamilton). Haskell’s system, on the other hand, adds components and complexity to speed transmission rate matching and requires two-way communications, which adds substantial complexity onto Hamilton’s single direction broadcasts. Combining systems and components in the Haskell and Hamilton as asserted in the §103 combination rejection would produce a device with increase complexity, which Hamilton openly teaches against. The current §103 rejection thus contradicts another rule in the MPEP for combining references: “References Cannot be Combined Where the Reference Teaches Away from Their Combination” (MPEP 2145 X.D.2).

For at least these reasons, any combination rejection using Haskell and Hamilton is improper per the MPEP, it is respectfully submitted that the claimed invention is not obvious in view of the prior art, and it is respectfully submitted that independent claims 1, 26, 30 and 31 are allowable over the art of record.

Withdrawal of the rejection under 35 USC 103(a) is therefore respectfully requested.

Dependent claims 3-8, 11-15 and 27-29 and 32 each depend directly from independent claims 1 and 26, respectively, and are therefore respectfully submitted to be patentable over the art of record for at least the reasons set forth above with respect to the independent claims. Furthermore, the dependent claims recite additional elements which when taken in the context of the claimed invention further patentably distinguish the art of record. For example, dependent claim 6 recites performing full decoding and re-encoding on a P-frame. Since Haskell does not teach full encoding and re-encoding, he therefore does not teach this limitation.

As to claim 33, the Examiner argues that this claim represents an embodiment of the invention that has been excluded by Applicant’s previous election of group I in response to an election/restriction requirement. Applicant disagrees. First, Applicant never elected certain figures and withdrew coverage for other figures. Applicant responded to the restriction requirement by electing Group I, which Applicant defined as claims 1-15 and 26-30. thus, the only restricted-out portion would have been the invention embodied in original claims 16-25, neither of which are pertinent to claim 33.

Second, Applicant notes that claim 33 is in fact generic to Figs. 1, 2A, 2B, 4D, and 5C. Specifically, claim 33 describes a method for converting the bit rate of a compressed bitstream to use an available bandwidth of a channel, the method comprising: re-quantizing a first portion of the bitstream that includes a chroma video data using a first re-quantization scheme that does not decode the first portion into a pixel domain; and re-quantizing a second portion of the bitstream that includes luma video data using a second re-quantization scheme that includes full decoding and re-encoding of the second portion. Fig. 1 is a system diagram that includes bit rate converter 22, which is a component that performs the method of claim 33. Fig. 2A depicts this component in more detail, including a re-quantization apparatus that performs the re-quantization steps of claim 33. Fig. 2B is an alternative detailed version of the bit rate converter 22 of FIG. 1, but still includes a requantization apparatus that performs the re-quantization steps of claim 33. Fig. 4D is a flow diagram describing method steps that are broadly represented in claim 33. Specifically, step 208 can be embodied in the first step of claim 33 and step 210 can be embodied in the second step of claim 33. Fig. 5C includes step 346, which can be embodied in the first step of claim 33 and step 348, which can be embodied in the second step of claim 33.

Thus, Applicant respectfully maintains that claim 33 is correctly interpreted as included in elected Group I and thus should be examined on the merits.

I am the attorney or agent acting under 37 CFR 1.34.

Respectfully submitted,
BEYER WEAVER LLP

/Marc S. Hanish/

Marc S. Hanish
Reg. No. 42,626

P.O. Box 70250
Oakland, CA 94612-0250
408-255-8001